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BROK et al.

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For: A METHOD AND ARRANGEMENT FOR BROWSING
DOCUMENTS IN A DATABASE

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Atty. Ref.: 2493-13

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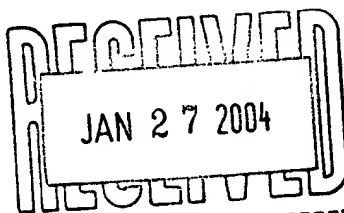
Examiner: Ludwig, M.

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Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

January 23, 2004



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SUBMISSION OF PRIORITY DOCUMENTS

It is respectfully requested that this application be given the benefit of the foreign filing date under the provisions of 35 U.S.C. §119 of the following, a certified copy of which is submitted herewith:

Application No.

Country of Origin

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972335

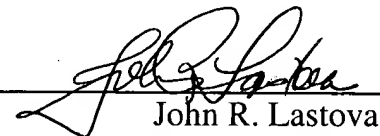
Finland

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P R I O R I T E T S I N T Y G
P R I O R I T Y D O C U M E N T

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Title of invention

"Method and arrangement for browsing"
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This is to certify that the annexed documents are true copies of description, claims, abstract and drawings, originally filed with the Finnish Patent Office.

Pirjo Kaila
Prövningssekreterare

Avgift 50
Fee 50 EUR

CERTIFIED COPY OF
PRIORITY DOCUMENT

Avgiften baserar sig på handels- och industriministeriets förordning 1027/2001 om Patent- och registerstyrelsens avgiftsbelagda prestationer jämte ändringar.

The fee is based on the Decree with amendments of the Ministry of Trade and Industry No. 1027/2001 concerning the chargeable services of the National Board of Patents and Registration of Finland.

METHOD AND ARRANGEMENT FOR BROWSING

FIELD OF THE INVENTION

The present invention relates to a method for browsing of documents stored in one or several databases. The invention relates further to an arrangement for performing the browsing operations.

BACKGROUND OF THE INVENTION

There are several known techniques for storing a large number of documents in a single document database. A single document in the database may contain references to other documents and for instance to image (graphics) files and/or sound files of the same or even to a separate database.

An example of this kind of document is so called HTML document (HyperText Markup Language) ie. the "hyperdocument", which is widely used in an Internet environment. The "Internet" is a worldwide network of computers capable of communication with each others by means of a suitable protocol, such as TCP/IP (Transmission Control Protocol / Internet Protocol). During the recent years the use of the Internet has expanded rapidly, especially after introduction of so called web browsers which allow a simple graphical user interface based (GUI) access to network servers supporting eg. said HTML documents.

One such HTML document is forming one entity which can contain text, pictures, even moving pictures, sound and links to other documents and even to other servers and files. A hyperdocument usually has so called "web master" who updates the document data stored in so called web server connected to the network and containing the database for the documents.

The Internet services, in turn, are in most cases provided utilizing so called WWW (World Wide Web) services, which provides a graphical user interface to Internet for a data processing device, such as a microcomputer or PC (personal computer). The WWW can be understood as a collection of servers connected to the Internet, which utilize so called

Hypertext Transfer Protocol (HTTP). This HTTP in turn utilizes said HTML standard page description.

It is possible to browse separate documents in given locations by the suitable terminal device ie. the "web browser", which can consist of a microcomputer or a workstation. When the web browser is connected to the network, such as to the Internet, the web server receives an URL (Uniform Resource Locator) request, decodes the URL, handles the document files and sends the requested files as response to the web browser.

It is also possible to browse documents locally, ie. in a local file system of a data processing device which may not be connected to any communications networks, ie. is so called stand alone data processing device. In case the documents are browsed locally, the document address (ie. a local file path) is given to the local file system which then retrieves the file to the browser. By using relative document references it is possible to transfer the whole document collection to a different location without any modifications to the documents itself.

SUMMARY OF THE INVENTION

The above arrangements involve some problems. The present browsing means, ie. eg. the web browsers, are not enabled to browse the document databases itself but only to load separate documents from a certain given address. In addition, a collection of great amount of documents, such as thousands of documents, is not easily managed. A single unit could be far more easily transferred electronically than the large collection of documents and/or files, which documents may even be of different types. A single unit could also be more easily given a product identity and a version identifier, and the quality of the information contained in the database could be guaranteed through proper version handling.

As the document in the database contains references to the other documents and/or to image (graphics) files, a problem arises in that how to enable the transfer of the document database to different locations while keeping the database in a manageable condition even in these different locations. In other words, a problem lies in the defining and handling of the document references so that a location independent database could be achieved. It would be a further advantage if the above could be defined such that the same arrangement could be used both in network use (the same database could be copied to any network server) and in a local file system, such as in a stand alone microcomputer (the same database could be copied to any file path in the file system).

Therefore, it is an object of the present invention to overcome the disadvantages of the prior art solutions and to provide a new type of solution for browsing of documents stored in one or several databases.

An object of the present invention is also to provide a browsing method and arrangement by means of which it is possible to have a such complete document database (eg. a document library, a document archive etc.), which is formed as a single unit, which enables the browsing of this database in a network environment and/or in a stand alone data processing device.

An object of the present invention is also to provide a method and arrangement in which the document references are defined and handled such that location independent databases are achieved.

It is also an object of the present invention to provide a database arrangement and method which can be utilized both in network environment and in a stand alone data processing device, and in addition such that the documents are usable in both occasions. A further object is an arrangement for this in which two programs can handle such a database.

Other objects and advantages of the present invention will be brought out in the following part of the specification taken in conjunction with the accompanying drawings.

The objects are obtained by the disclosed method for browsing documents stored in a database. In said method at least one of said documents is including references to other documents and/or files in the database, and the browsing comprises steps for retrieving of a desired document from the database as response to a request for that document by browsing means, a dynamic transforming of the references of said retrieved document from a special syntax to a form said browsing means is capable of understanding, and transmitting the referenced documents and/or files to said browsing means.

According to an alternative embodiment, a method is disclosed for browsing documents stored in at least two databases connected to each other by communication means, wherein at least one of said documents is including references to other documents and/or files in one or several of the databases. The browsing comprises steps for retrieving of a desired document from at least one of the databases as response to a request for that document by browsing means, a dynamic transforming of the references of said retrieved document from a special syntax to a form said browsing means is capable of understanding, and transmitting the referenced documents and/or files to said browsing means.

According to a preferred embodiment the inventive arrangement arrangement for browsing documents stored in a database, wherein at least one of said documents to be browsed includes references to other documents and/or files in the database, is comprising browsing means, means for retrieving a desired document from the database and for accomplishing a dynamic transformation of the references of said desired document from a special syntax to a form said browsing means is capable of understanding, and means for transmitting said referenced documents and/or files to said browsing means.

A further embodiment discloses a method for browsing operation and maintenance documents for telecommunication systems stored in a database, at least one of said documents including references to other documents and/or files in the database, wherein the browsing comprises retrieving of a desired document from the database as response to a request for that document by browsing means, a dynamic transforming of the references of said retrieved document from a special syntax to a form said browsing means is capable of understanding, and transmitting the referenced documents and/or files to said browsing means.

Several advantages are obtained by means of the present invention, since the solution provides a simple, reliable and controllable manner for document browsing. The solution provides an automatic and transparent linking of various different documents. The document database to be browsed is provided in a form of a complete document database. It also enables the use of one single database in different situations, such as in a network (eg. world wide web of the Internet) and standalone (eg. PC) use, and on different physical locations without a need to be modified. This all provides an improved and eased administration and maintenance of such databases compared to those having thousands of separate documents of various types.

In the following the present invention and the other objects and advantages thereof will be described by way of an example with reference to the annexed drawings, in which similar reference characters throughout the various figures refer to similar features. It should be understood that the following description of an example of the invention is not meant to restrict the invention to the specific forms presented in this connection but rather the present invention is meant to cover all modifications, similarities and alternatives which are included in the spirit and scope of the present invention, as defined by the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a schematic presentation of an arrangement according to the present invention for network use;

Figure 2 is a schematic presentation of an arrangement according to one embodiment of the present invention for stand alone use;

Figure 3 is a schematic presentation of an arrangement according to the present invention for both the network and stand alone use;

Figure 4 discloses an exemplifying flow chart of the operations in web use according to one embodiment of the present invention; and

Figure 5 discloses one example of a page displayed to the user.

DETAILED DESCRIPTION OF THE DRAWINGS

The present invention provides a new type of method and arrangement for browsing of a database, either in a network environment, such as in the world wide web (WWW) (figure 1) when the computer is connected to the WWW, or in a stand alone data processing device (figure 2), such as in a microcomputer or personal computer (PC), or both (figure 3). The database can also be located in LAN (Local Area Network) environment when the computer, such as a PC, is connected to the LAN in order to browse the database thereof.

Suitable data processing devices or computers are per se known by the skilled person, and thus it is only mentioned herein that such an apparatus usually comprises a central processing unit (CPU), memory means such as RAM (Random Access Memory) and ROM (Read Only Memory) and a display or corresponding means for presenting information to the user. A keypad and a mouse are provided for enabling the user to control and instruct the apparatus.

Figure 1 is a schematical presentation of one embodiment according to the present invention accomplished in a network environment. In the figure 1 a standard web server (www server) is designated by 2. A document server 3 is arranged to handle a document database 4, and to transform references in a required manner. As is shown in figure 1, single lined arrows are intended to indicate requests and double lined arrows to indicate data communication.

A means 6 for web browsing is arranged to communicate with said web server means 2. The skilled person knows the operational principles and operation of different web browsers, such as Netscape NavigatorTM or ExplorerTM by Microsoft Corp., and thus they are not explained in more detail herein. An advanced web browsing system in connection with the Internet is also disclosed by US patent 5,572,643 (Judson), which is incorporated herein by reference.

The communications between the WWW server 2 and the web browsing means 6 is arranged to use http (hyper text transfer protocol) and a tcp/ip connection (Transport Control Protocol/Internet Protocol).

The database 4 contains HTML documents (HyperText Markup Language) ie. "hyperdocuments". One such document forms one entity which can contain text, images and pictures, even moving pictures or video, sound and links to other documents. The database may contain further eg. GIF image files (Graphic Image Files) and other types of documents and/or files, as was explained above. References from one document to another (or to the image file or similar) are according to a specific syntax.

The document server 3 is provided with capability of managing said document database 4, and it is arranged to dynamically transform the references of the various documents in said database from the specific syntax to a form which is understandable by the web browser means 6. One example of this kind of transforming operation is shown by a detailed exemplifying code listing included to this description.

In more detail, the web (eg. World Wide Web: WWW) server 2 can be accessed through a graphic user interface, such as eg. MosaicTM, NetscapeTM, CelloTM etc., for reading the HTML documents. In order to find the requested document to be browsed, the document reference must be in an Uniform Resource Locator (URL) form. The URL has the following general syntax:

<protocol> : <address> ? <data> # <name>

It is, however, to be understood that the above syntax is given only as an example, and that other possible syntaxes could also be used.

The browser means 6 is provided with a knowledge about a predefined set of protocols,

and their respective protocol handlers. These protocols are per se known, and are such as the above mentioned 'http' (hyper text transfer protocol) and 'file'.

When the 'http' protocol is used, the address will be in a form of an Internet address (eg. lm.ericsson.se) and a pathname to the requested document in the web server 2 (eg. /docs/doc.html). The request is routed over the Internet to a specified host machine which is positioned at the Internet address given to the ULR. At the host machine, the web server uses the pathname portion of the address to locate the requested document. The pathname may also specify a CGI (Common Gateway Interface) program to be executed, in which case the CGI program is responsible for returning the requested document to the web server 2, which in turn will transmit it to the web browser means 6 (the client) as response through the tcp/ip connection.

In case the 'file' is used, the address is a local file path (eg. C:\mydir\doc.htm). The handler of this type of address is the local file system, which is capable of fetching the requested document on the basis of the given file path, and to give it to the web browser for displaying purposes.

In a specific case where a NetscapeTM compatible browser is used, it is possible for an external program to define (name) a new protocol to the browser means 6. This external program implicitly becomes the protocol handler for this new protocol. When such a protocol has been defined, the browser sends requests (URLs) containing this protocol to the external program (eg. program A in figure 2). The external program will then become responsible for decoding this type of URL.

The database 4 contains several files, such as text, image and sound files. From these the text files are containing necessary references to other files. All documents are thus located in one single database file which can be copied to any location either for stand alone use or for network use. The document references in the documents included within this database contain a special protocol (named as 'edw') which is not automatically known by the browser means 6. For this reason certain transformations of the references (URLs) must take place before a document is given to the browser means 6 for the displaying purposes. The situation is the same both in network use (figure 1) and stand alone use (figure 2).

The following is discussed in view of these transformations. A reference is also made to the following exemplifying code listing:

In the database (4):-----

```

<BODY BACKGROUND="edw:/alex?AC=image&FN=bopi_bg.gif">
<A NAME=TOP></A>
<IMG WIDTH="98%" HEIGHT=71 SRC="edw:/alex?AC=image&FN=bopihead.gif">
<P><BR>
<P>
<A NAME=CONTENTS><B>Contents</B></A>
<PRE>
    <A HREF="edw:/alex?FN=bopi_in1.html#CHAPTER1"><B>GENERAL,APT</B></A>
    <A HREF="edw:/alex?FN=bopi_in1.html#CHAPTER1.1">Administrative routines</A>
    <A HREF="edw:/alex?FN=bopi_in1.html#CHAPTER1.2">Product handling</A>

```

In Web browsing:-----

```

<BODY BACKGROUND="http://lm.ericsson.se/cgi-bin/alexserv?DB=aa33.alx&
AC=image&FN=bopi_bg.gif">
<A NAME=TOP></A>
<IMG WIDTH="98%" HEIGHT=71
SRC="http://lm.ericsson.se/cgi-bin/alexserv?DB=aa33.alx&AC=imag e&FN =bopihead.gif">
<P><BR>
<P>
<A NAME=CONTENTS><B>Contents</B></A>
<PRE>
    <A
HREF="http://lm.ericsson.se/cgi-bin/alexserv?DB=aa33.alx&FN=bopi_in1.html
#CHAPTER1"><B>GENERAL, APT</B></A>
    <A
HREF="http://lm.ericsson.se/cgi-bin/alexserv?DB=aa33.alx&FN=bopi_in1.html
#CHAPTER1.1">Administrative routines</A>
    <A
HREF="http://lm.ericsson.se/cgi-bin/alexserv?DB=aa33.alx&FN=bop i_in1.html#CHAPTER1.2">Product
handling</A>

```

In stand alone (PC) browsing:-----

```

<BODY BACKGROUND="file:///C:/TEMP/ALEX_TMP/aa33/alex0022.gif">
<A NAME=TOP> </A>
<IMG WIDTH="98%" HEIGHT=71 SRC="file:///C:/TEMP/ALEX_TMP/aa33/alex0023.gif">
<P> <BR>
<P>
<A NAME=CONTENTS> <B>Contents</B> </A>
<PRE>
  <A HREF="edw:/alex?FN=bopi_in1.html#CHAPTER1"> <B>GENERAL, APT</B> </A>
  <A HREF="edw:/alex?FN=bopi_in1.html#CHAPTER1.1"> Administrative routines</A>
  <A HREF="edw:/alex?FN=bopi_in1.html#CHAPTER1.2"> Product handling</A>

```

In view of above exemplifying listings, and when supposed that the address to a document in the database 2 is:

edw:/alex?FN= <doc name> ,

wherein <doc name> is the name of the referenced document. It is to be noted that the name of the database is not included in the address, since the user may rename the database file.

The address to the document that should be retrieved from a web server has the following form:

http:// <server address> / <server name> ?FN= <doc name> &DB= <db name>

wherein <server address> is the Internet address of the web server in which the database is located, <server name> is the name of the server document program and <db name> is the name of the document database. When a document is retrieved from a web located database, all URLs (both to other documents and to image files included in said document) the document contains must be transformed to the above described form.

In case the document is retrieved via the stand alone program, ie. via 'A' in figure 2, the document cannot be given directly to the browser means 6. This is a restriction of the external interface of the browser. Thus the document must be firstly stored as a file on a local storage means, such as a local hard disk (C:) 10. Therefore the address to the file retrieved in the stand alone mode has the following form:

file://C:\temp\

where 'C:\temp\' can be any local file path and 'file name' is the name of the temporary file containing the actual requested document. When a certain document is retrieved from a stand alone database 4, all such ULRs which make a reference to other documents in said database can be left as they are, since they will be decoded in due course by said stand alone program 'A' at 12. However, all the references the document makes to image files must be transformed to the above form, as the browser means 6 expects them to be immediately available. This is because of the external interface of the browser, which sets a restriction according to which the mechanism for requesting URLs from the external program works only for complete documents, and not for image files included in a certain document. Thus the external program 'A' must retrieve all image files the document contains simultaneously as it retrieves the text file of the document.

It is to be understood that all shown means of figure 2 are preferably disposed with a single data processing device such as a PC. The database 4 may also be a part of a LAN network (Local Area network).

Now, after having described the formations, the actions to be taken by the document browsing arrangement will be described in more detail for both the network version and the stand alone version, respectively.

The operation in network environment will be discussed first referring again to figure 1. The operation is initiated by taking a connection to document server 3. A list of databases including the database 4 is given through the display of the browser 6, whereafter the user may select the desired database (database 4 in the example). Thereafter a supposition document from the selected database is displayed (eg. the document of figure 5). The document server 3 receives then a request for a certain document from the browser means 6 via web server means 2, as is indicated by the single lined arrows. The document server retrieves then the document from the database 4. All references to other documents are searched and transformed into 'http' form references including the actual address to the document server and the database name. This includes references to images and other documents. The document is then given to the web server 2, which transmits it further to the browser means 6, as is indicated by the double lined arrows, respectively.

The browser means 6 loads the document and upon finding references to possible image files sends out a new request to retrieve each of the referenced image files and similar. Since the

reference to a certain image file is a http link, each reference will generate a new request for the document server 3 to retrieve the image file (or any other possible referenced file).

The operation steps for the network use are also illustrated by the flow chart of figure 4. At step 100 the browser means send a request for a certain document to the web server. The document is then retrieved from the database by means of the document server, step 102. References to other documents and/or files are searched, step 104. In the next step (106), the syntaxes of the found references are transformed by means of the document server into a form the browser is capable of understanding. Thereafter the document is given to the web server and is further transmitted to the browser means as a response to the request (steps 108 and 110, respectively). The document is loaded into the browser, step 112, and possible requests for the additional referenced documents are sent to the web server, step 114. These are retrieved from the database (or several databases) in a corresponding manner to the browser, step 116.

The document is now retrieved to the browser means 6 and displayed by the display means thereof, step 118. One example of such a document is shown in figure 5. The documents and/or files can be browsed locally at the browser. As shown in figure 5, the document may contain some additional references shown to the user which are of the above mentioned http type, and thus when the user 'clicks' eg. by the mouse or buttons of the keypad one or several of the references, the whole process will begin again.

In the stand alone use (figure 2), the operation can be described in the following manner. The user starts program 'A' which starts the actual program in case it is not already running. The program 'A' defines itself to the browser 6 as the handler for the 'edw' protocol and will receive all requests that are based on this protocol. So when the user clicks on a reference which is utilizing the 'edw' protocol, the whole URL is sent to the program 'A'. The URL contains the name of the document to be retrieved.

The document is retrieved from the database and possible links to image files or the like are searched and the found file links are transformed to 'file:/' links. Simultaneously the image and other possible files are retrieved from the database and stored on the local file system in a place which corresponds to the 'file:/' links inserted into the document. The text document is given a file name and stored to the local hard disk 10. Finally the browsing means 6 is instructed to load the file from said hard disk 10.

The browsing means 6 loads the file and upon finding searched references to the appropriate files it loads also these into the window or display of the browsing means 6. The document in

the browser display contains now the document references of the 'edw' type described above, and thus, when the user clicks on one of them a new request will be generated to the external program A. Thus the stand alone data processing device is capable of handling the document database, to communicate with the browser's external interface and to transform the references to the image file documents or similar from their special syntax to a form which the browser is able to understand.

Figure 3 illustrates the possibility of using both of the above described arrangements. This could be the case eg. with portable computers which may be connected for the most of the time to the communications network, but are occasionally used as standalone computers.

According to the present invention, it is possible to transmit several documents and/or files from more than one database as a single unit from the web server to the browsing means.

According to one embodiment the files are transmitted and handled in a compressed form during the retrieving operations. The compressing may be accomplished eg. by means of a well known ZIP program.

The invention enables the use of one single database in different situations, such as in a network and standalone use, and on different physical locations without a need to be modified. This provides an improved and eased administration and maintenance of such databases.

Thus one preferred use for the inventive solution is browsing of operation and maintenance documents for telecommunication equipment (eg. AXE O&M documents, AXE being a trademark of Telefonaktiebolaget L M Ericsson for an exchange by the same). An advantage to the operator is that only one single document database is required to be installed in one single location in the Intranet of the operator, whereafter the documentation will become available throughout the whole organization. On the other hand, when a service person is going to go to eg. accomplish some reparations in an exchange at which no web connections are available, the service person can have the latest documentation in a stand alone portable computer he/she is carrying with.

Thus, the invention provides an apparatus and a method by which a significant improvement can be achieved in the area of web browsing. It is to be noted that the foregoing examples of the embodiments of the invention are not intended to restrict the scope of the invention defined in the appended claims. All additional embodiments, modifications and applications obvious to those skilled in the art are thus included within the spirit and scope of the invention as set forth by the claims appended hereto.

Claims

1. Method for browsing documents stored in a database, at least one of said documents including references to other documents and/or files in the database, wherein the browsing comprises
retrieving of a desired document from the database as response to a request for that document by browsing means,
a dynamic transforming of the references of said retrieved document from a special syntax to a form said browsing means is capable of understanding, and
transmitting the referenced documents and/or files to said browsing means.
2. Method for browsing documents stored in at least two databases connected to each other by communication means, at least one of said documents including references to other documents and/or files in one or several of the databases, wherein the browsing comprises
retrieving of a desired document from at least one of the databases as response to a request for that document by browsing means,
a dynamic transforming of the references of said retrieved document from a special syntax to a form said browsing means is capable of understanding, and
transmitting the referenced documents and/or files to said browsing means.
3. A method according to claim 2, characterized in that the documents and/or files stored in at least two databases are transmitted to said browsing means as one unit.
4. A method according to claim 1, 2 or 3, characterized in that it is executed in a network environment or in a stand alone data processing device or in both.
5. A method according to any of claims 1 to 4, characterized in that the browsed documents are HTML documents stored in a WWW server connected to an Internet by means of a http protocol.
6. A method according to any of claims 1 to 4, characterized in that the browsed documents are HTML documents stored in a stand alone dataprocessing device.
7. A method according to any of the preceding claims, characterized in that the documents including the references are in form of text documents or files and that said referenced documents are text and/or image and/or sound files or the like.

8. A method according to any of the preceding claims, characterized in that the document references are formed as Uniform Resource Locator (URL).
9. A method according to any of the preceding claims, characterized in that the files are transmitted and/or handled in a compressed form (eg. in a ZIP form).
10. An arrangement for browsing documents stored in a database, wherein at least one of said documents to be browsed includes references to other documents and/or files in the database, the arrangement comprising
browsing means,
means for retrieving a desired document from the database and for accomplishing a dynamic transformation of the references of said desired document from a special syntax to a form said browsing means is capable of understanding, and
means for transmitting said referenced documents and/or files to said browsing means.
11. An arrangement for browsing documents stored in at least two databases connected to each other by communication means, wherein at least one of said documents to be browsed includes references to other documents and/or files in one or several of the databases, the arrangement comprising
browsing means,
means for retrieving a desired document from at least one of the databases and for accomplishing a dynamic transformation of the references of said desired document from a special syntax to a form said browsing means is capable of understanding, and
means for transmitting said referenced documents and/or files to said browsing means.
12. An arrangement according to claim 10 or 11, characterized in that it is implemented in a network environment or in a stand alone data processing device or in both.
13. An arrangement according to any of claims 10 to 12, characterized in that the browsed documents are HTML documents stored in a WWW server connected to an Internet by means of a http protocol.
14. An arrangement according to any of claims 10 to 12, characterized in that the browsed documents are HTML documents stored in a stand alone dataprocessing device.

15. An arrangement according to any of the preceding claims 10 to 14, characterized in that the documents including the references are in form of text documents or files and that said referenced documents are text and/or image and/or sound files or the like.

16. An arrangement according to any of the preceding claims 10 to 15, characterized in that the document references are in the form of Uniform Resource Locator (URL).

17. An arrangement according to any of the preceding claims 10 to 16, characterized in that the files are arranged to be transmitted and/or handled in a compressed form (eg. in a ZIP form).

18. A method for browsing operation and maintenance documents for telecommunication systems stored in a database, at least one of said documents including references to other documents and/or files in the database, wherein the browsing comprises retrieving of a desired document from the database as response to a request for that document by browsing means, a dynamic transforming of the references of said retrieved document from a special syntax to a form said browsing means is capable of understanding, and transmitting the referenced documents and/or files to said browsing means.

(57) Abstract

The present invention relates to methods and arrangements for browsing documents stored in a database or several databases. At least one of said documents is including references to other documents and/or files in the database or several databases. The browsing comprises steps for retrieving of a desired document from the database(s) as response to a request for that document by browsing means, a dynamic transforming of the references of said retrieved document from a special syntax to a form said browsing means is capable of understanding, and transmitting the referenced documents and/or files to said browsing means.

(Fig. 3)

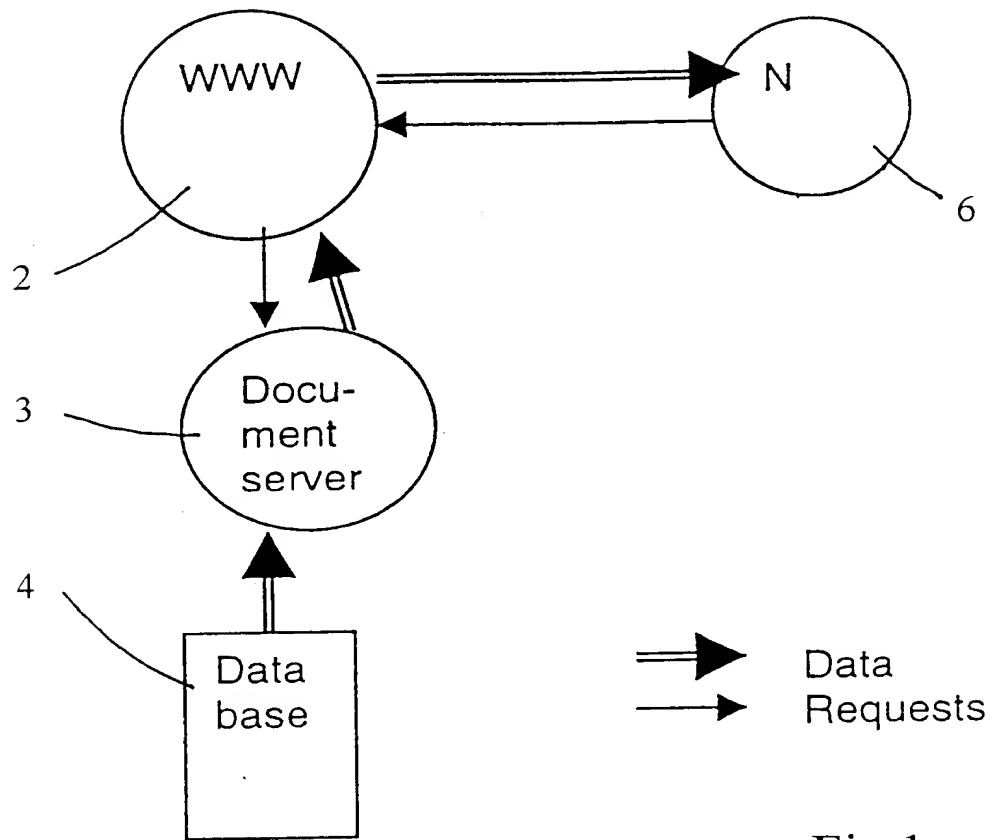


Fig 1

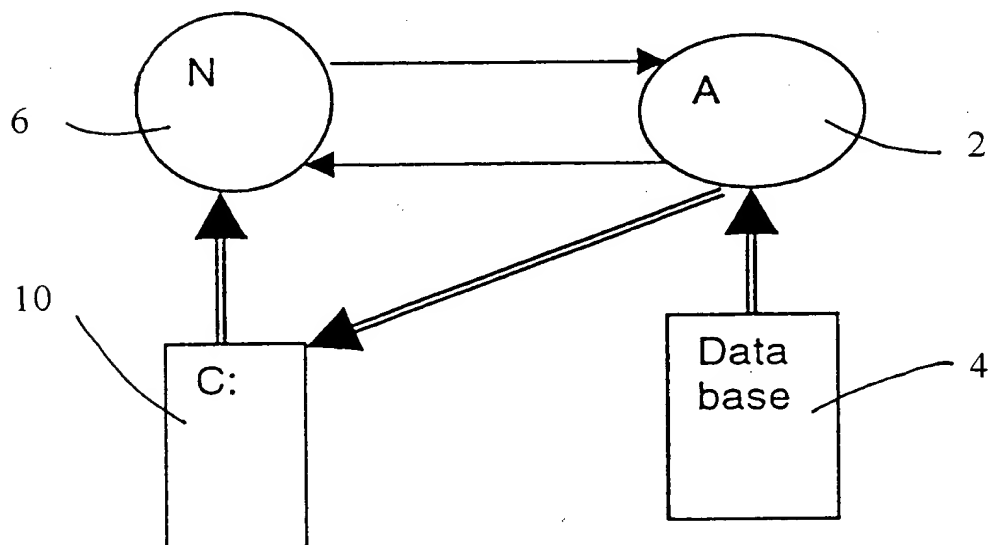


Fig 2

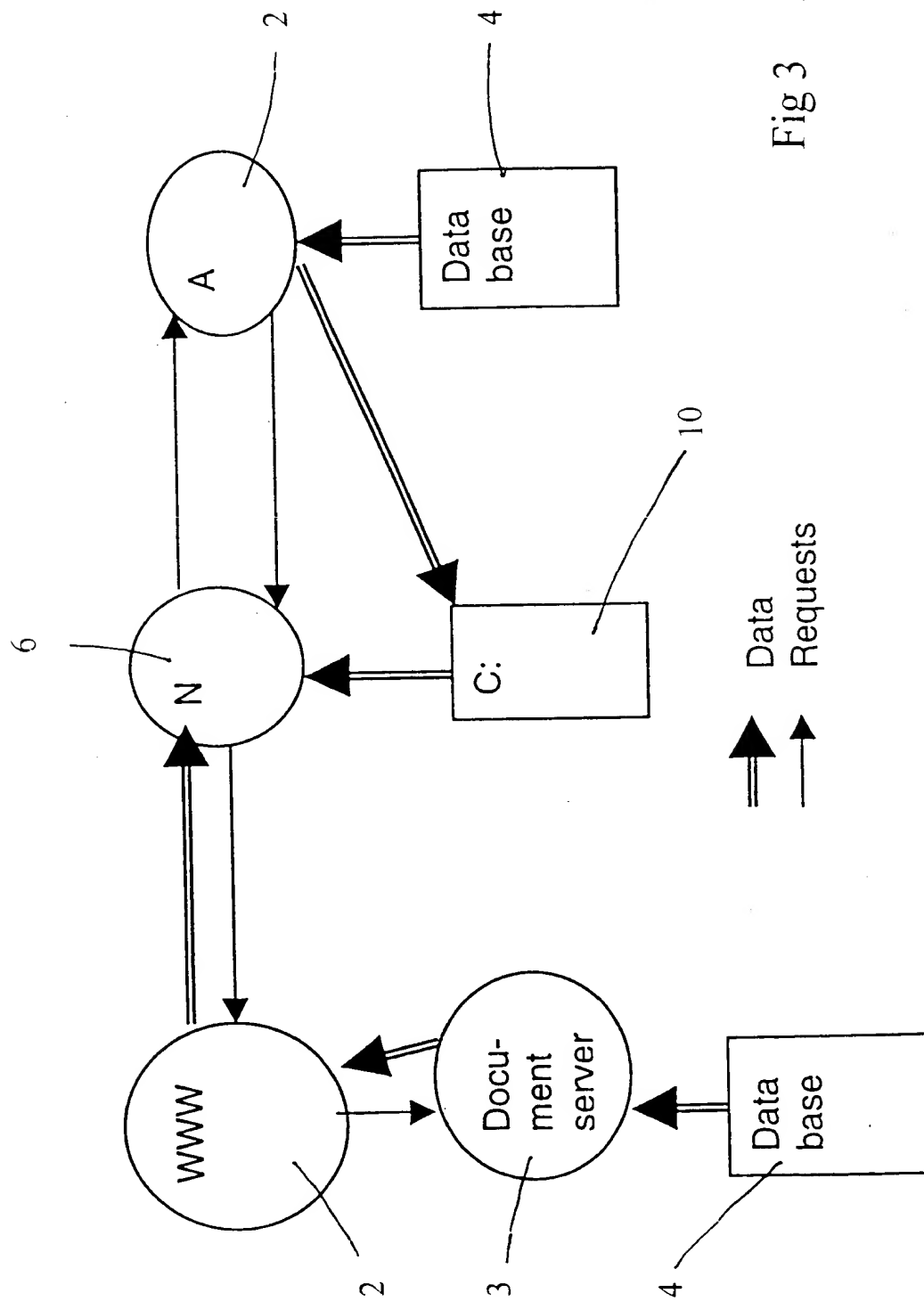


Fig 3

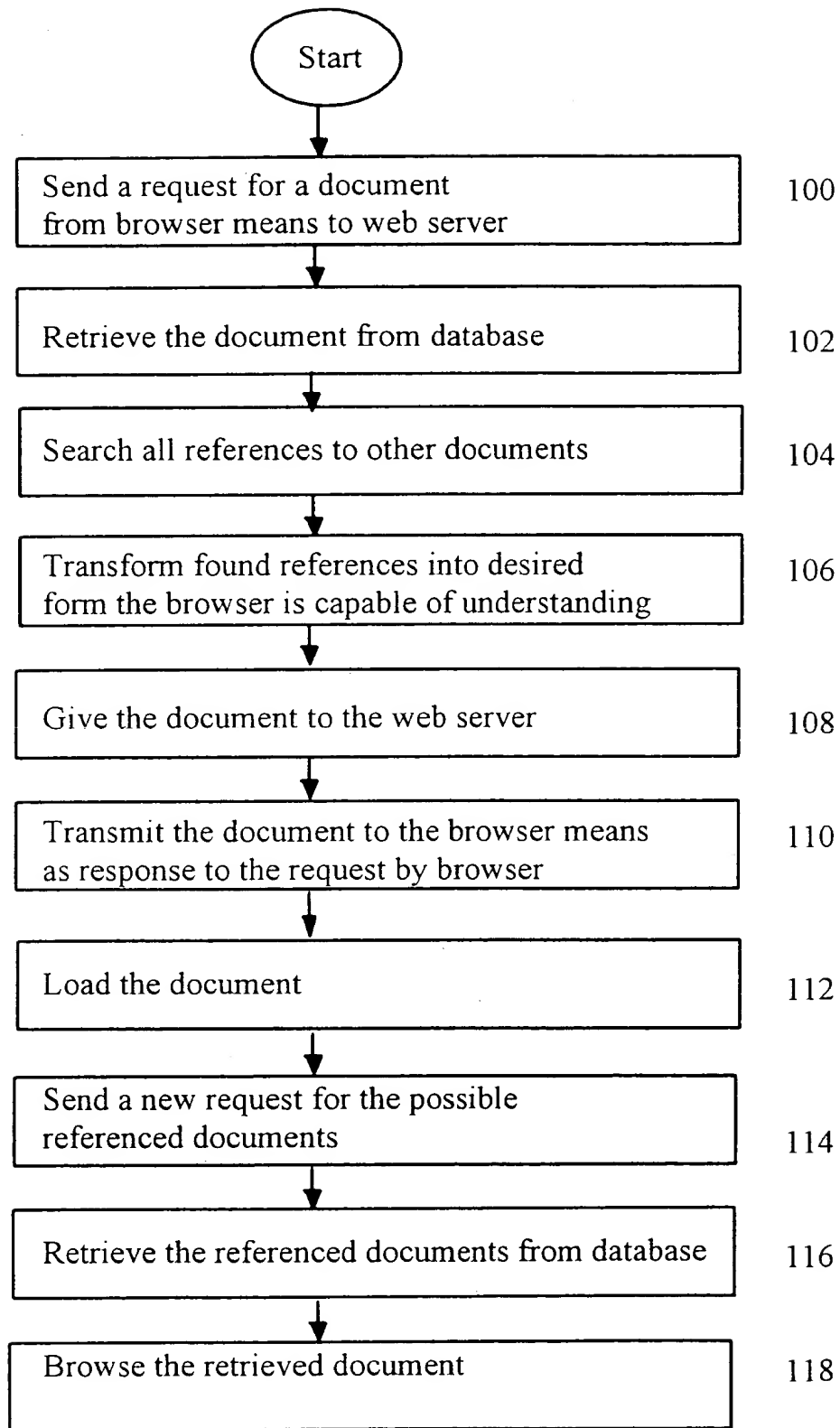


Fig 4

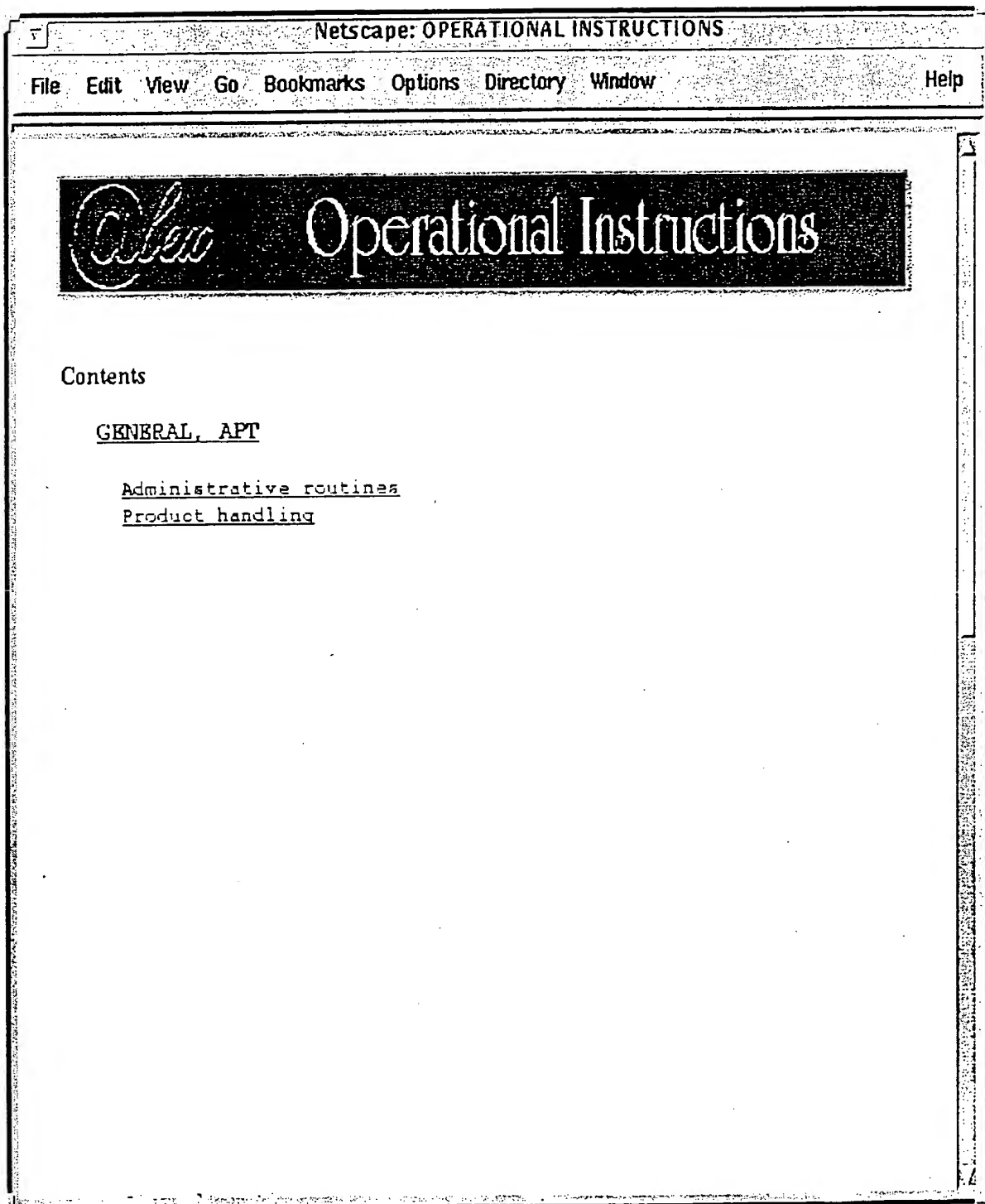


Fig 5